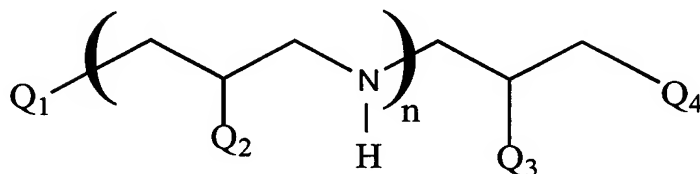


IN THE CLAIMS

1. (Withdrawn) A compound having a general structure represented by formula:



wherein:

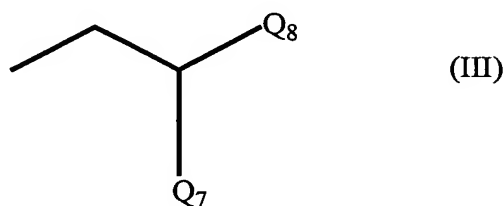
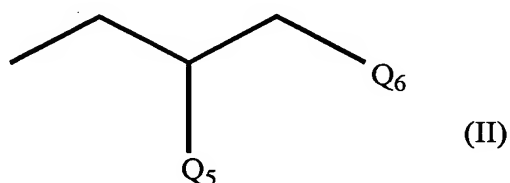
n is 0 or a positive integer;

Q₁ is N(R)₃ +, N(R)₂, O(R), or O(R)₂ + wherein each R substituent is independently selected from the group consisting of H, a straight chain or branched alkyl or alkenyl, a straight chain or branched alkyl or alkenyl ether, a straight chain or branched alkyl or alkenyl ester and a straight chain or branched alkyl or alkenyl carbonyldioxide with the proviso that at least one R substituent on the O or N atom of Q₁ is not H;

Q₃ and each Q₂ are independently selected from the group consisting of H, O(R'), N(R')₂, NH(R''), and S(R'); and

Q₄ is selected from the group consisting of N(R')₂, and NH(R''); wherein:

R' is H or one the following moieties:



and wherein each of Q_5 , Q_6 , Q_7 and Q_8 are independently selected from the group consisting of $N(R)_3^+$, $N(R)_2$, OR , $O(R)_2^+$, $O(R')$, $N(R')_2$, $NH(R'')$, $S(R)$, $S(R)_2^+$ and $S(R')$; wherein each R substituent on Q_5 , Q_6 , Q_7 or Q_8 is independently selected from H or a methyl group;

each R' substituent on Q_5 , Q_6 , Q_7 or Q_8 is as defined above for Q_4 ; and

each R'' substituent on Q_2 , Q_3 , Q_4 , Q_5 , Q_6 , Q_7 or Q_8 is independently hydrogen or comprises a moiety selected from the group consisting of amino acid residues, polypeptide residues, protein residues, carbohydrate residues, and combinations thereof.

2. (Withdrawn) The compound of Claim 1, wherein Q_4 is $N(R')_2$ and both R' substituents on the Q_4 nitrogen atom are represented by formula II or formula III.

3. (Withdrawn) The compound of Claim 2, wherein Q_3 is H or OH .

4. (Withdrawn) The compound of Claim 1, wherein Q_1 is $N(R)_2$ and wherein both R substituents on the Q_1 nitrogen atom are straight chain alkyl or alkenyl groups having from 8 to 27 carbon atoms.

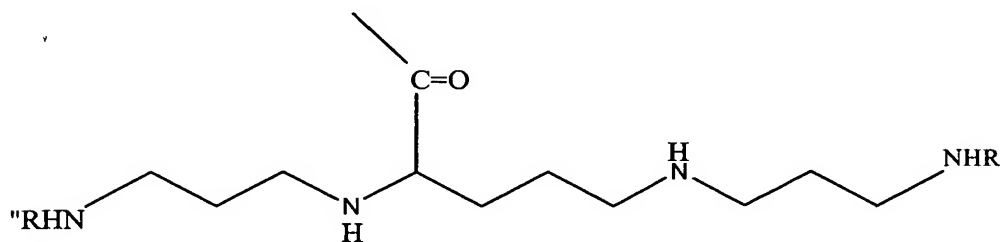
5. (Withdrawn) The compound of Claim 4, wherein Q_3 is H or OH .

6. (Withdrawn) The compound of Claim 5, wherein Q_4 is $N(R')_2$ wherein both R' substituents on the Q_4 nitrogen atom are represented by formula II wherein Q_5 is OH .

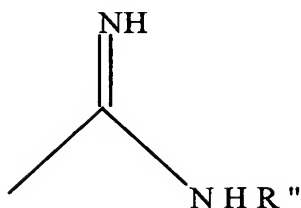
7. (Withdrawn) The compound of Claim 6, wherein Q_6 is NHR'' and wherein R'' substituent on the Q_6 nitrogen atom comprises:

a peptide residue;

a spermine residue represented by the formula



or a moiety represented by the formula:



8. (Withdrawn) The compound of Claim 7, wherein R'' substituent on the Q₆ nitrogen atom comprises a peptide-protein residue.

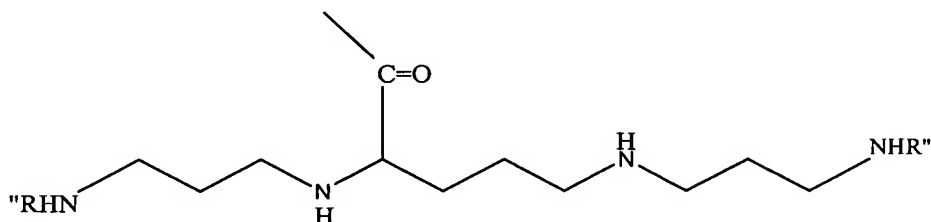
9. (Withdrawn) The compound of Claim 1, wherein Q₁ is N(R)₃⁺, Q₃ is OH, and Q₄ is N(R')₂ wherein both R' substituents on the Q₄ nitrogen atom are moieties represented by formula II wherein Q₅ is OH and Q₆ is N(CH₃)₃⁺.

10. (Withdrawn) The compound of Claim 9, wherein two of the R substituents on the Q₁ nitrogen atom are straight chain alkyl groups having from 8 to 27 carbon atoms and wherein the third R substituent on the Q₁ nitrogen atom is a methyl group.

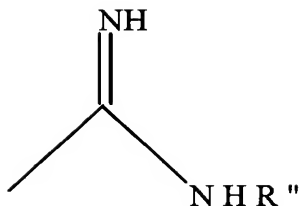
11. (Withdrawn) The compound of Claim 4, wherein Q₄ is NHR'' and Q₃ is OR' wherein the R' substituent on the Q₃ oxygen atom is represented by formula II wherein Q₅ is OH and Q₆ is NHR'.

12. (Withdrawn) The compound of Claim 11, wherein the R' substituent on the Q₆ nitrogen atom comprises:

a spermine residue represented by the formula



or a moiety represented by the formula:



13. (Withdrawn) The compound of Claim 3, wherein Q_4 is $N(R')_2$ wherein both R' substituents on the Q_4 nitrogen atom are moieties represented by formula II wherein Q_5 is OH and Q_6 is NHR''.

14. (Withdrawn) The compound of Claim 4, wherein: Q_3 is OH; Q_4 is NHR''; $n = 2$; and each Q_2 is OR' wherein the R' substituent on each Q_2 oxygen atom is a moiety as represented by formula II wherein Q_5 is OH and Q_6 is NHR''.

15. (Withdrawn) The compound of Claim 4, wherein: $n=0$; Q_3 is OH; Q_4 is $N(R')_2$ wherein both R' substituents on the Q_4 nitrogen atom are moieties as represented by formula II wherein Q_5 is OR' and Q_6 is NHR''; and wherein the R' substituent on each Q_5 oxygen atom is moiety represented by formula II wherein Q_5 is OH and Q_6 is NHR''.

16. (Withdrawn) The compound of Claim 1, wherein Q_3 is OR' , NHR' or SR' and Q_4 is $N(R')_2$ wherein one R' moiety on the Q_4 nitrogen atom is a moiety of formula II wherein Q_6 is OR' and the remaining R' moiety on the Q_4 nitrogen atom is represented by the moiety of formula III wherein Q_8 is OR' .

17. (Withdrawn) The compound of Claim 16, wherein $n = 0$, Q_1 is $-N(R)_2$ and Q_3 is OR' .

18. (Withdrawn) The compound of Claim 1, wherein Q_3 is $-OR'$, $NH(R')$ or $S(R')$ and Q_4 is $N(R')_2$ wherein both R' substituents on Q_4 are represented by the moiety of formula II wherein Q_5 is OR' .

19. (Withdrawn) The compound of Claim 18, wherein Q_3 is OR' and wherein Q_2 is OR' , SR' , or $N(R')_2$.

20. (Withdrawn) The compound of Claim 1, wherein: Q_3 is OR' , NHR' or SR' ; and wherein Q_4 is $N(R')_2$ wherein one of the R' substituents on the Q_4 nitrogen atom is represented by the moiety of formula II wherein Q_5 is OR' , and the remaining R' substituent on the Q_4 nitrogen atom is represented by the moiety of formula III wherein Q_8 is OR' .

21. (Withdrawn) The compound of Claim 20, wherein Q_2 and Q_3 are OR' .

22. (Withdrawn) The compound of Claim 20, wherein the R' substituent on the Q_2 oxygen atom is represented by formula II wherein Q_5 is OH and Q_6 is $N(R')_2$ and wherein both R' substituents on the Q_6 nitrogen atom are represented by formula II wherein Q_5 is OR' .

23. (Withdrawn) A lipid aggregate comprising one or more molecules of a compound as set forth in Claim 1.

24. (Withdrawn) The lipid aggregate of Claim 23, further comprising at least one lipid aggregate forming compound.

25. (Withdrawn) A kit comprising a compound as set forth in Claim 1 and at least one additional component selected from the group consisting of one or more cells, a cell culture media, a nucleic acid, a transfection enhancer and combinations thereof.

26. (Withdrawn) The kit of Claim 25, wherein the kit comprises a transfection enhancer selected from the group consisting biodegradable polymers, cell membrane disruption peptide, cell surface receptor ligands, and DNA condensing proteins.

27. (Withdrawn) The kit of Claim 26, wherein the transfection enhancer is a biodegradable polymer selected from the group consisting of natural polymers, modified natural polymers, synthetic polymers, carbohydrates, and polysaccharides.

28. (Withdrawn) The kit of Claim 27, wherein the transfection enhancer is a polysaccharide selected from the group consisting of amylopectin, hemi-cellulose, hyaluronic acid, amylose, dextran, chitin, cellulose, heparin and keratan sulfate.

29. (Withdrawn) The kit of Claim 26, wherein the transfection enhancer is a DNA condensing protein selected from the group consisting of histones and protamines.

30. (Withdrawn) The kit of Claim 25, wherein the kit comprises:
a cell comprising one or more enzymes involved in DNA expression; and
an inhibitor which inhibits at least one of the one or more enzymes
involved in DNA expression.

31. (Withdrawn) The kit of Claim 25, wherein the kit comprises:
a cell comprising one or more surface receptors; and
a ligand which interacts with at least one of the one or more surface
receptors.

32. (Withdrawn) The kit of Claim 31, wherein the ligand is a polypeptide or a carbohydrate.

33. (Original) A method for introducing a substance into cells comprising:
forming a liposome from a compound as set forth in Claim 1;
contacting the liposome with the substance to form a complex between the liposome and
the substance; and
incubating the complex with one or more cells.

34. (Original) The method of Claim 33, wherein the substance is selected from the group consisting of a nucleic acid, an oligonucleotide and a carbohydrate.

35. (Withdrawn) The method of Claim 33, wherein the substance is a polypeptide or a protein.

36. (Withdrawn) The method of Claim 33, wherein the substance is a biologically active substance.

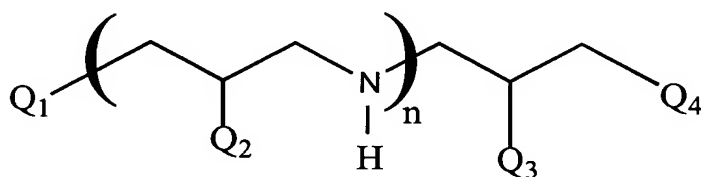
37. (Previously Presented) A method for introducing a substance into cells comprising incubating one or more cells with a compound as set forth in Claim 1, wherein the compound is associated with a pharmacological agent or a genetic material.

38. (Withdrawn) The method of Claim 37, wherein the compound is associated with a pharmacological agent selected from the group consisting of non-peptide drugs, proteins, peptides, steroids and hormones.

39. (Previously Presented) The method of Claim 37, wherein the compound is associated with a genetic material selected from the group consisting of DNA, RNA, oligonucleotides, and nucleic acids.

40-42. (Canceled).

43. (New) A method for introducing a substance into cells *in vitro*, comprising:
forming a lipid aggregate from a lipid compound having a general structure represented by formula:



wherein:

n is 0 or a positive integer;

Q₁ is N(R)₃ +, N(R)₂, O(R), or O(R)₂ + wherein each R substituent is independently selected from the group consisting of H, a straight chain or branched alkyl or alkenyl, a straight chain or branched alkyl or alkenyl ether, a straight chain or branched alkyl or alkenyl ester and a straight chain or branched alkyl or alkenyl carbonyldioxide with the proviso that at least one R substituent on the O or N atom of Q₁ is not H;

Q₃ and each Q₂ are independently selected from the group consisting of H, O(R'), N(R')₂, NH(R''), and S(R'); and

Q_4 is selected from the group consisting of $N(R')_2$, and $NH(R'')$; wherein:

R' is H or one the following moieties:

and wherein each of Q_5 , Q_6 , Q_7 and Q_8 are independently selected from the group consisting of $N(R)_3^+$, $N(R)_2$, OR, $O(R)_2^+$, $O(R')$, $N(R')_2$, $NH(R'')$, $S(R)$, $S(R)_2^+$ and $S(R')$; wherein each R substituent on Q_5 , Q_6 , Q_7 or Q_8 is independently selected from H or a methyl group;

each R' substituent on Q_5 , Q_6 , Q_7 or Q_8 is as defined above for Q_4 ; and

each R'' substituent on Q_2 , Q_3 , Q_4 , Q_5 , Q_6 , Q_7 or Q_8 is independently hydrogen or comprises a moiety selected from the group consisting of amino acid residues, polypeptide residues, protein residues, carbohydrate residues and combinations thereof; and

contacting the lipid aggregate with the substance to form a complex between the lipid aggregate and the substance; and

incubating the complex with one or more cells *in vitro*.

44. (New) The method of Claim 43, wherein each of Q_5 , Q_6 , Q_7 and Q_8 are independently selected from the group consisting of $N(R)_3^+$, $N(R)_2$, OR, $O(R)_2^+$, $NH(R'')$, $S(R)$, and $S(R)_2^+$.

45. (New) The method of Claim 43, wherein Q_4 is $N(R')_2$ and both R' substituents on the Q_4 nitrogen atom are represented by formula II or formula III.

46. (New) The method of Claim 45, wherein Q_3 is H or OH.

47. (New) The method of Claim 43, wherein Q_1 is $N(R)_2$ and wherein both R substituents on the Q_1 nitrogen atom are straight chain alkyl or alkenyl groups having from 8 to 27 carbon atoms.

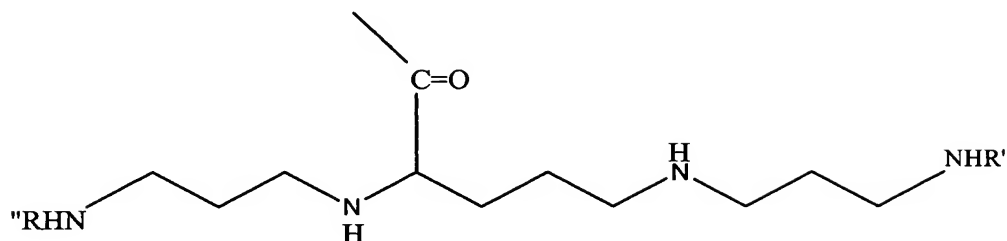
48. (New) The method of Claim 47, wherein Q_3 is H or OH.

49. (New) The method of Claim 48, wherein Q_4 is $N(R')_2$ wherein both R' substituents on the Q_4 nitrogen atom are represented by formula II wherein Q_5 is OH.

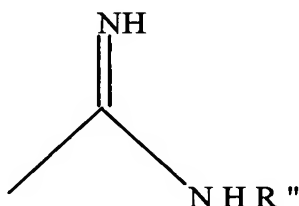
50. (New) The method of Claim 49, wherein Q_6 is NHR'' and wherein R'' substituent on the Q_6 nitrogen atom comprises:

a peptide residue;

a spermine residue represented by the formula



or a moiety represented by the formula:



51. (New) The method of Claim 50, wherein R" substituent on the Q₆ nitrogen atom comprises a peptide-protein residue.

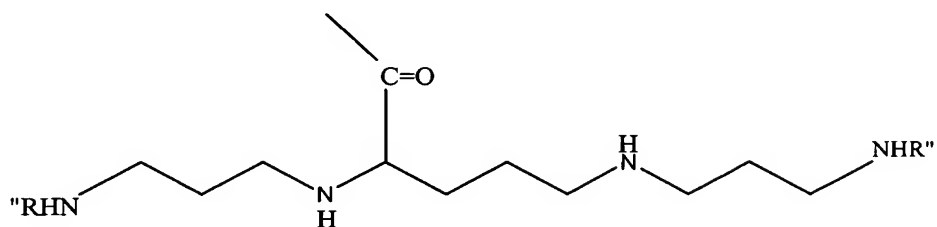
52. (New) The method of Claim 43, wherein Q₁ is N(R)₃⁺, Q₃ is OH, and Q₄ is N(R')₂ wherein both R' substituents on the Q₄ nitrogen atom are moieties represented by formula II wherein Q₅ is OH and Q₆ is N(CH₃)₃⁺.

53. (New) The method of Claim 52, wherein two of the R substituents on the Q₁ nitrogen atom are straight chain alkyl groups having from 8 to 27 carbon atoms and wherein the third R substituent on the Q₁ nitrogen atom is a methyl group.

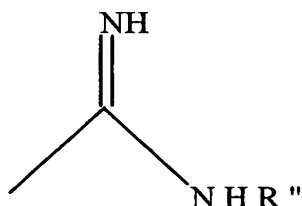
54. (New) The method of Claim 47, wherein Q₄ is NHR" and Q₃ is OR' wherein the R' substituent on the Q₃ oxygen atom is represented by formula II wherein Q₅ is OH and Q₆ is NHR'.

55. (New) The method of Claim 54, wherein the R' substituent on the Q₆ nitrogen atom comprises:

a spermine residue represented by the formula



or a moiety represented by the formula:



56. (New) The method of Claim 46, wherein Q₄ is N(R')₂ wherein both R' substituents on the Q₄ nitrogen atom are moieties represented by formula II wherein Q₅ is OH and Q₆ is NHR\".

57. (New) The method of Claim 47, wherein: Q₃ is OH; Q₄ is NHR\"; n = 2; and each Q₂ is OR' wherein the R' substituent on each Q₂ oxygen atom is a moiety as represented by formula II wherein Q₅ is OH and Q₆ is NHR\".

58. (New) The method of Claim 47, wherein: n=0; Q₃ is OH; Q₄ is N(R')₂ wherein both R' substituents on the Q₄ nitrogen atom are moieties as represented by formula II wherein Q₅ is OR' and Q₆ is NHR\"; and wherein the R' substituent on each Q₅ oxygen atom is moiety represented by formula II wherein Q₅ is OH and Q₆ is NHR\".

59. (New) The method of Claim 43, wherein Q₃ is OR', NHR' or SR' and Q₄ is N(R')₂ wherein one R' moiety on the Q₄ nitrogen atom is a moiety of formula II wherein Q₆ is OR' and

the remaining R' moiety on the Q₄ nitrogen atom is represented by the moiety of formula III wherein Q₈ is OR'.

60. (New) The method of Claim 59, wherein n = 0, Q₁ is -N(R)₂ and Q₃ is OR'.

61. (New) The method of Claim 43, wherein Q₃ is -OR', NH(R') or S(R') and Q₄ is N(R')₂ wherein both R' substituents on Q₄ are represented by the moiety of formula II wherein Q₅ is OR'.

62. (New) The method of Claim 61, wherein Q₃ is OR' and wherein Q₂ is OR', SR', or N(R')₂.

63. (New) The method of Claim 43, wherein: Q₃ is OR', NHR' or SR'; and wherein Q₄ is N(R')₂ wherein one of the R' substituents on the Q₄ nitrogen atom is represented by the moiety of formula II wherein Q₅ is OR', and the remaining R' substituent on the Q₄ nitrogen atom is represented by the moiety of formula III wherein Q₈ is OR'.

64. (New) The method of Claim 63, wherein Q₂ and Q₃ are OR'.

65. (New) The method of Claim 63, wherein the R' substituent on the Q₂ oxygen atom is represented by formula II wherein Q₅ is OH and Q₆ is N(R')₂ and wherein both R' substituents on the Q₆ nitrogen atom are represented by formula II wherein Q₅ is OR'.

66. (New) The method of Claim 43, wherein the lipid aggregate is a liposome.

67. (New) The method of Claim 43, wherein the substance is DNA.

68. (New) The method of Claim 43, wherein the substance is siRNA.